

Numerical on K-means Clustering

9.00

10.00

11.00

12.00

Lunch

2.00

3.00

4.00

5.00

6.00

7.00

8.00

Notes

A	B	C
Products	Quantity	Price (K)
FaceWash	3	7
Cream	5	4
Shoes	4	3
Bags	4	8
Jacket	6	3
Shirt	3	8

$$C_1 = (3, 7) \text{ and } C_2 = (5, 4)$$

For First Data Point (3, 7) • Facewash

Distance from $C_1 = 0$

$$\text{Distance from } C_2 = \sqrt{(5-3)^2 + (4-7)^2} = \sqrt{4+9} = \sqrt{13} = 3.60$$

23 January
Monday

2023

সোমবার, ৯ মাঘ ১৪২৯ বাংলা
৩০ জমাঃ সানি ১৪৪৪ হিজরি

January 20						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

8.00 For second data point (5,4) Cream

9.00 Distance from $C_1 = \sqrt{(5-3)^2 + (4-7)^2}$

10.00 $= 3.60$

11.00 Distance from $C_2 = 0$

12.00 For third data point (4,3) shoes:

Lunch Distance from $C_1 = \sqrt{(4-3)^2 + (3-7)^2}$

2.00 $= 4.123$

3.00 Distance from $C_2 = \sqrt{(4-5)^2 + (3-4)^2}$

4.00 $= 1.41$

5.00 So new centroid = $\frac{5+4}{2}, \frac{4+3}{2}$

6.00 $C_2 = (4.5, 3.5)$

7.00 $C_1(3,7)$ and $C_2(4.5, 3.5)$

Notes

January 2023						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	11	10	12	13	14
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22	23	24	25	26	27	28
29	30	31				

2023

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১ রজব ১৪৪৮ হিজরি

January 24
Tuesday

8.00 For 4th data point (4,8) bags:

9.00 Distance from $C_1 = \sqrt{(4-3)^2 + (8-7)^2}$
10.00 $= 1.41$

11.00 Distance from $C_2 = \sqrt{(4-4.5)^2 + (8-3.5)^2}$
12.00 $= \sqrt{20.50} = 4.52$

Lunch \therefore New centroid $= \frac{3+4}{2}, \frac{7+8}{2}$
2.00 $C_1 = (3.5, 7.5)$

3.00 For 5th data point (6,3) Jacket

4.00 Distance from $C_1 = \sqrt{(6-3.5)^2 + (3-7.5)^2}$
5.00 $= \sqrt{26.5} = 5.14$

6.00 Distance from $C_2 = \sqrt{(4.5-6)^2 + (3-3.5)^2}$
7.00 $= 2.50$

8.00 New centroid $= \frac{5+4+6}{3}, \frac{4+3+3}{3}$
Notes $C_2 = (5, 3.33)$

25 January
Wednesday

2023

বুধবার, ১১ মাঘ ১৪২৯ বাংলা
২ রজব ১৪৪৪ হিজরি

January 2023						
S	M	T	W	T	F	S
1	2	3	4	5	6	7
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8.00 $C_1 = (3.5, 7.5)$ and $C_2 = (5, 3.33)$

9.00 For 6th data points $(-3, 8)$ Shift :

10.00 Distance from $C_1 = \sqrt{(3-3.5)^2 + (8-7.5)^2}$
11.00 $= 0.70$

12.00 Distance from $C_2 = \sqrt{(3-5)^2 + (8-3.33)^2}$
Lunch $= 5.08$

2.00 New centroid = $\frac{3+4+3}{3}, \frac{7+8+8}{3}$

3.00 $C_1 = (3.33, 7.67)$

4.00 $C_2 = (5, 3.33)$

5.00

6.00

7.00

8.00